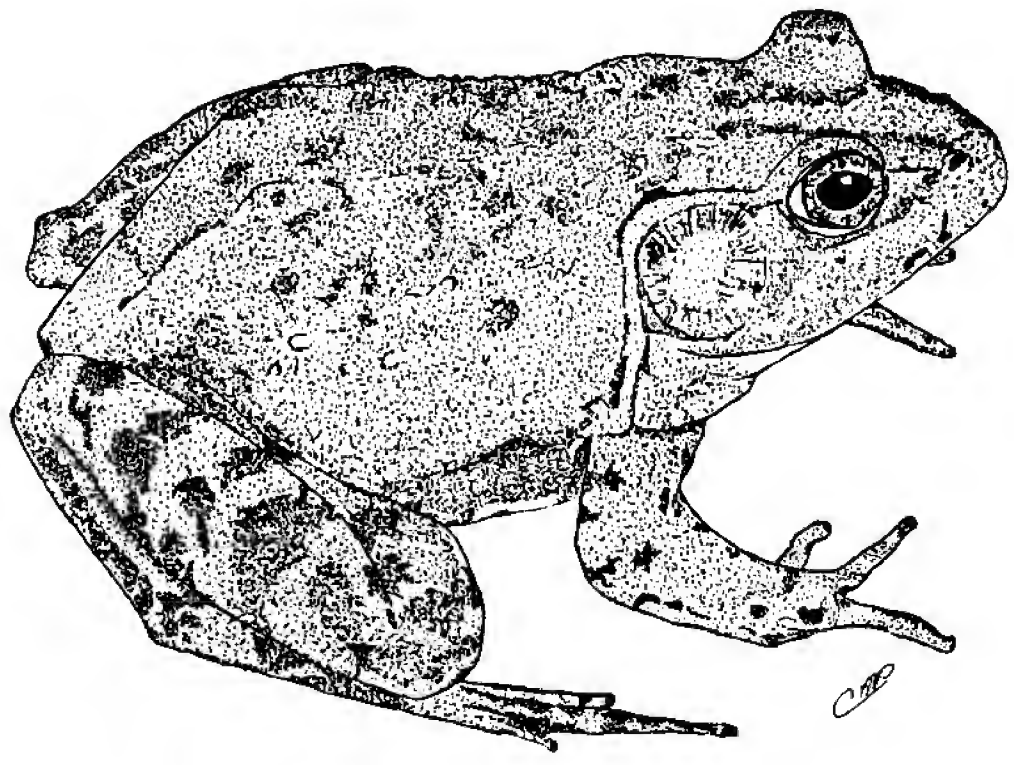
CATESBEIANA



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CATESBEIANA

Journal of the Virginia Herpetological Society

Volume 36 Fall 2016 No.2

Contents

Desmognathus planiceps from Rock Castle Gorge

Update on Snake Fungal Disease in Eastern Virginia

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Introduction:

Snake Fungal Disease (SFD) is an emerging wildlife disease caused by the fungus *Ophidiomyces ophiodiicola* (Oo) (Allender et al., 2015a; Lorch et al., 2015). SFD has been documented in a variety of snake species throughout the eastern and midwestern United States over the past ten years (Allender et al., 2016b). This disease is characterized by crusty scales, superficial pustules, subcutaneous nodules of the skin, dysecdysis, and ocular cloudiness with variable morbidity and mortality in snakes (Guthrie et al., 2016). Some species of snake including the Timber Rattlesnake (*Crotalus horridus*) and the Eastern Massasauga (*Sistrurus catenatus*) experience significant facial disfiguration and high mortality associated with SFD infection (Sutherland et al., 2014; Allender et al., 2015a). While the disease is mostly commonly associated with dermatomycosis, disseminated systemic infections have been documented in some snakes (Dolinski et al., 2014; Robertson et al., 2016). SFD has been documented in both captive and free-ranging snakes and has broad geographic and taxonomic distributions (Allender et al., 2016a).

In 2014, we conducted a study in southeastern Virginia; 30 free ranging non-venomous snakes were examined and eight of those snakes were positive for SFD using fungal culture, histopathology, and PCR testing (Guthrie et al., 2016). Species of snakes that were SFD positive in the 2014 study included the Brown Watersnake (*Nerodia taxispilota*), Common Rainbow Snake (*Farancia e. erytrogramma*), Northern Watersnake (*Nerodia s. sipedon*), Eastern Black Racer (*Coluber c. constrictor*), and the Eastern Ratsnake (*Pantherophis alleghaniensis*).

Methods:

In 2015, our investigation was focused on three sites in southeastern Virginia; False Cape State Park (36.62971818, -75.90019047), Back Bay National Wildlife Refuge (36.68816205, -75.92289671), and the Virginia Zoo (36.8763071, -76.2782861) (permit numbers: FC-RCP-031015, BKB-A Guthrie, 048445). Forty-two free ranging snakes were manually captured and examined by a veterinarian. Snakes were given a transponder subcutaneously for permanent identification (AVID Identification Systems, Inc., Norco, California, USA). Snakes having skin lesions consistent with SFD were sampled through skin biopsies taken using previously described methods (Guthrie et al., 2016). Samples were submitted to the United States Geological Survey - National Wildlife Health Center for fungal culture, histopathologic examination and PCR testing (Bohuski et al., 2015).

Results:

A total of 42 snakes were manually captured and examined (Table 1). Biopsy samples from three snakes were submitted for diagnostic testing based on skin lesions consistent with SFD.

All three of these snakes were positive for SFD on multiple diagnostic tests.

Table 1: Results of snake fungal disease testing in southeastern Virginia in 2015. Back Bay National Wildlife Refuge (BBNWR), False Cape State Park (FCSP), Virginia Zoo (VZ), Brown Watersnake (BWS), Eastern Cottonmouth (CM), Eastern Black Racer (EBR), Northern Watersnake (NWS), Northern Rough Greensnake (NGS), Common Ribbonsnake (CRS), Common Rainbow Snake (CRS), Eastern Gartersnake (EGS), Eastern Rat Snake (BRS), Northern Brownsnake (NBS)

Snake ID	Cap Date	Cap Loc	Species	Sex	Body Wt (g)	Body length (cm)	Lesions (Y/N)	Biopsy (Y/N)	Culture (+/-)	Histo (+/-)	PCR (+/-)
15-001	4-11-15	BBNWR	BWS	F	1860	150	Y	Y	+	+	+
15-002	4-11-15	BBNWR	BWS	F	1520	150	Y	N			
15-003	4-11-15	BBNWR	CM	M		91	N	N			
15-004	4-11-15	BBNWR	CM	M	350	82.5	N	N			
15-005	4-11-15	BBNWR	EBR	M	190	100.5	N	N			
15-006	4-11-15	BBNWR	CM	F	310	74	N	N			
15-007	4-11-15	BBNWR	BWS	F	2070	143	N	N			
15-008	4-11-15	BBNWR	CM	M	410	81	N	N			
15-009	4-11-15	BBNWR	BWS	F	1310	128	Y	Y	+	+	+
15-010	4-11-15	BBNWR	BWS	M	80	86	Y	N			
15-011	4-15-15	VZ	NWS	M	330.1	88	N	N			
15-012*	5-2-15	BBNWR	BWS	F	1840	157	Y	N			
15-013	5-2-15	BBNWR	CM	F		64	N	N			
15-014	5-2-15	BBNWR	NGS	M	40	79	N	N			
15-015	5-2-15	BBNWR	CR	M	30	63	N	N			
15-016	5-2-15	BBNWR	CM	M	850	103	N	N			
15-017	5-2-15	BBNWR	CRS		220	80	Y	Y	-	+	+
15-018	5-2-15	BBNWR	CM	M	720	101	N	N			
15-019	5-5-15	VZ	EGS		73.3	66	N	N			
15-020	5-13-15	VZ	BRS	M	1070	172	N	N			
15-021	6-7-15	BBNWR	CM	F	1070	81	N	N			
15-022	6-7-15	BBNWR	BRS	M	700	117	N	N			
15-023	6-7-15	FCSP	BRS	M	480	135	N	N			
15-024	6-7-15	FCSP	CM	M	340	77	N	N			
15-025	6-7-15	FCSP	NWS	F	240	64	N	N			
15-026	6-7-15	FCSP	CM	F	1020	70	N	N			

15-027	6-7-15	FCSP	NWS	F	230	75	N	N				
15-028	6-7-15	FCSP	BWS	F	950	122	N	N				
15-029	6-7-15	FCSP	NWS	M	120	72	N	N				
15-030	6-7-15	FCSP	BWS		230	81	N	N				
15-031	6-7-15	FCSP	NBS	F		30	N	N				
15-032	6-7-15	FCSP	BWS	F	490	110	N	N				
15-033	6-7-15	FCSP	BWS	M	320	90	N	N				
15-034	6-7-15	FCSP	BWS	F	110	70	N	N				
15-035	6-7-15	VZ	NWS	M	225	81	N	N				
15-036	7-16-15	VZ	BRS	M	45	63	N	N				
15-037	7-18-15	VZ	NGS	M	19	59	N	N				
15-038	8-24-15	VZ	EGS	F	105.4	75	N	N				
15-039	8-28-15	BBNWR	CM	M		77	N	N				
15-040	8-28-15	BBNWR	CM	M	220	68	N	N				
15-041	8-28-15	BBNWR	BWS	F	2090	136	N	N				
15-042	9-18-15	VZ	NGS	F	26		N	N				
15-043	10-9-15	VZ	EGS	M	30	51	N	N				

* same individual as 15-001, snake was captured twice in 2015.

Forty-two individual snakes were captured in 2015; one female Brown Watersnake was captured twice. Snakes captured included 12 Brown Watersnakes (*Nerodia taxispilota*), 12 Eastern Cottonmouths (*Agkistrodon p. piscivorus*), 1 Eastern Black Racer (*Coluber c. constrictor*), 5 Northern Watersnakes (*Nerodia s. sipedon*), 2 Northern Rough Greensnakes (*Opheodrys aestivus*), 1 Common Ribbonsnake (*Thamnophis s. sauritus*), 1 Common Rainbow Snake (*Farancia e. erytrogramma*), 3 Eastern Gartersnakes (*Thamnophis s. sirtalis*), 4 Eastern Ratsnakes (*Pantherophis alleghaniensis*), and one Northern Brownsnake (*Storeria d. dekayi*). Three snakes, two Brown Watersnakes and one Common Rainbow Snake, were confirmed positive for SFD with fungal culture, histopathology and PCR testing.

Discussion:

In 2014, we captured 30 non-venomous snakes and 8 (27%) were SFD positive; in 2015, we captured 42 snakes and 3 (7%) were SFD positive. Interestingly, in 2015 we captured 12 Eastern Cottonmouths (*Agkistrodon p. piscivorus*); none of these animals had skin lesions consistent with SFD. This is notable because some other North American pit viper species such as the Eastern Massasauga and Timber Rattlesnake have suffered significant population declines due to SFD (Allender et al., 2015b; Lorch et al., 2015). Experimental models have inoculated Eastern Cottonmouths with Oo and caused clinical disease (Allender et al., 2015a). There is evidence that disease severity is likely variable between individuals or species (McBride et al.,

2015; Guthrie et al., 2016). Overall, the snakes we examined, including the SFD positive ones, appeared clinically healthy.

Oo acts as a primary pathogen and may be transmitted via direct contact between individuals and/or indirect infection via environmental exposure (Sutherland et al., 2014; Lorch et al., 2015; Rzadkowska et al., 2016). Recommended control measures for preventing the spread of SFD are lacking (Rzadkowska, et al., 2016) but the United States Geological Survey – National Wildlife Health Center recommends wearing clean disposable gloves when handling sick or dead snakes. Supplies and field equipment should be cleaned with soap and water followed by disinfection with a 10% bleach solution. When SFD is known to occur in a region, snakes whose skin lesions appear to resolve with supportive care and/or antifungal therapy may be candidates for release at their capture site. However, these individual should not be released in an area where the disease has not been previously as it is not known if treated snakes may still harbor viable fungus.

A recent study demonstrated that bleach was effective at inactivating Oo using either a 3% or 10% solution at 2-, 5-, and 10-minute contact times. Additionally, some common household cleaners such as Lysol products, CLR, and 409 were effective. However, chlorhexidine, Simple Green, and spectracide were ineffective at killing Oo spores (Rzadkowska et al., 2016). Mud or leaf litter should be removed from equipment and shoes before application of disinfectant to ensure adequate exposure (Rzadkowska et al., 2016).

Acknowledgements:

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El Niño and December Herp Activities

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Introduction

Weather plays a major factor in the life history of any species of reptile or amphibian. The weather helps species time various behaviors such as hibernation, estivation, and breeding cycles. Virginia's latitudinal position allows for four distinct seasonal weather patterns. These patterns of winter, spring, summer, and fall occur with regularity and allow species to fall into predictable patterns of behavior. However, some years have weather patterns that deviate from what is normally expected. During these unusual weather patterns new amphibian and reptile behaviors can be observed. One weather pattern that can disrupt normal behavior is the El Niño Southern Oscillation (ENSO) or simply El Niño. This weather cycle is created when the eastern and central equatorial Pacific Ocean, which is normally cold, warms (Trenberth, 1997). The warming of this water causes global weather pattern changes including warmer weather during the winter and more precipitation in the Southeast United States. El Niño events have been occurring since the beginning of the Holocene epoch (Moy et.al, 2002), so this is not a new weather phenomenon affecting reptiles and amphibians. With this being said though, the intensity and frequency of these events has increased significantly in the past three decades (Lee and McPhaden, 2010). This increase in frequency and intensity can disrupt normal patterns of behavior as will be outlined in this report. The 2015-2016 El Niño is considered to have been a very strong event, with significant warming of the surface waters of the eastern and central Pacific Ocean. This El Niño has been linked to the warm and wet December which Virginia experienced in 2015. The period of 7 December until 16 December had daytime high temperatures between 15.5°C and 21°C, with 12 December having a high of 25°C. Another warm period of temperatures between 15.5°C and 21°C daytime highs lasted from 22 December to 28 December, 27 December had a high of 25°C. During these warm and wet weeks, the authors surveyed areas known to have populations of amphibians and reptiles to see what affects this warm weather would have on amphibian and reptile behavior. This report is a summary of what we observed.

Annotated Species Accounts

Amphibians

Acris crepitans (Northern Cricket Frog)
One Northern Cricket frog was found on a wet path leading to a field planted with wildlife crops at White Oak Mountain Wildlife Management Area (abbreviated to WOM WMA for subsequent citations) (36°48'0.11"N, 79°19'43.70"W) in Pittsylvania County, Virginia on 27 December.

Northern Cricket Frog found at WOM WMA on 27 December 2015.

Anaxyrus americanus (Eastern American Toad)
On 27 December, a lone male American Toad was heard calling at Peaks View Park at 1830 h in Lynchburg, Virginia (37° 25' 06.7"N, 79° 13'25.8"W). He was still calling at 0600 h on December 28.

Lithobates catesbeianus (American Bullfrog)
American Bullfrogs were observed basking on rocks surrounding two small man-made ponds at JG's home residence from 24 December to 27 December (36°41'32.08"N, 79°25'31.90"W). Two frogs were observed sitting on rocks on 25 December, five frogs were observed sitting on rocks at 2015 h on 25 December, and five frogs were observed sitting on rocks at 1800 h on 27 December.

Lithobates clamitans (Green Frog)
A juvenile Green Frog was observed on the bank of a small tributary to Ivy Creek at Peaks View Park in Lynchburg at about 1400 h (37° 25' 19.1"N, 79° 13' 25.6"W).. It hopped into a thicket of brush and disappeared, but was out on the bank in the same location 30 minutes later.

Pseudacris crucifer (Spring Peeper)
On 13 December, males were heard calling at two different ponds at WOM WMA (36°46'47.44"N, 79°19'54.64"W and 36°46'54.98"N, 79°19'24.48"W). Males were heard calling at 1330 h, air temperature was 20°C. On 24 December three spring peepers were heard calling from the forest and wetlands area at 1040 h at Angler's park (36°33'39.67"N, 79°21'28.00"W). Air temperature was 18°C and it was raining. On 24 December two male Spring Peepers were heard calling at 1150 h from the forest surrounding a pond at WOM WMA. On 25 December one male was heard calling at 1201 h at a wetlands site at Anglers Park. Air temperature was 21°C. One DOR (dead on road) frog was found on Northside Drive, a hard paved road which parallels the wetlands area. Another calling male was heard at

1252 h at a beaver pond in Dan Daniel Memorial Park (36°34'29.89"N, 79°22'0.34"W). This individual was calling from the woods surrounding the beaver pond. On December 25 a small chorus of Peepers was calling from the wetland ditch behind softball diamond #3 at Peaks View Park (37° 25' 22.2"N, 79° 13' 21.7"W). On December 26, three males were observed calling at 1440 h from the forest adjacent to the wetlands at Anglers Park. On 27 December two males were observed calling at 1403 h and 1421 h from the woods surrounding a fishing pond at WOM WMA (36°46'54.98"N, 79°19'24.48"W). The air temperature was 23.8°C. On 27 December, two males were calling at 1443 h from the forest surrounding wetlands at WOM WMA (36°46'47.44"N, 79°19'54.64"W). The last observation for this species occurred on 31 December. A small chorus of 3-4 males was calling with overlapping calls at Peaks View Park in Lynchburg.

DOR Spring Peeper found on Northside Drive in Danville Virginia on 25 December 2015.

Pseudacris feriarum (Upland Chorus Frog)
On 13 December one male was heard calling at 1332 h from near a pond and wetlands area (36°46'46.34"N, 79°19'53.31"W) at WOM WMA. Air temperature was 20°C. On 24 December six males formed a chorus from a wetlands area in Anglers Park in Danville Virginia (36°33'40.41"N, 79°21'27.21"W). Males were heard calling at 1040 h with an air temperature of 18.3°C and rain. Two DOR frogs were found on the road adjacent to this site. A large chorus (continuous and overlapping calls) of Upland Chorus Frogs was heard at a swampy wetlands site in Dan Daniel Memorial Park (36°34'40.20"N, 79°22'32.71"W). These frogs were heard calling at 1106 h. On 25 December one chorus frog was heard calling at 1246 h from a beaver pond at Dan Daniel Memorial Park (36°34'29.41"N, 79°22'0.01"W). Air temperature was 21°C. Four DOR frogs were found on Northside Drive (36°33'41.51"N, 79°21'27.81"W), a road that parallels a wetlands site and hardwood forest at Anglers Park. On 26 December one male chorus frog was heard calling at 1452 from the hardwood forest adjacent to the wetlands at Anglers Park. The air temperature was 18°C and it was raining. On the same day several males were heard calling from a swampy wetlands area at Dan Daniel Memorial Park. On 27 December two males were heard calling at 1444 h and 1447 h respectively, near a wetlands at WOM WMA (36°46'42.27"N, 79°19'56.47"W). On that same date a large chorus of continuous overlapping calls heard in a field planted in wildlife crops at WOM WMA (36°48'2.14"N, 79°19'39.83"W). Upon closer investigation the males were calling from flooded tractor tire ruts in the middle of a sorghum field. Three males were hand captured and photographed. This chorus was heard at 1546 h with an air temperature of 23.8°C.

DOR and live Upland Chorus Frogs found at Anglers Park in the city of Danville and WOM WMA respectively.

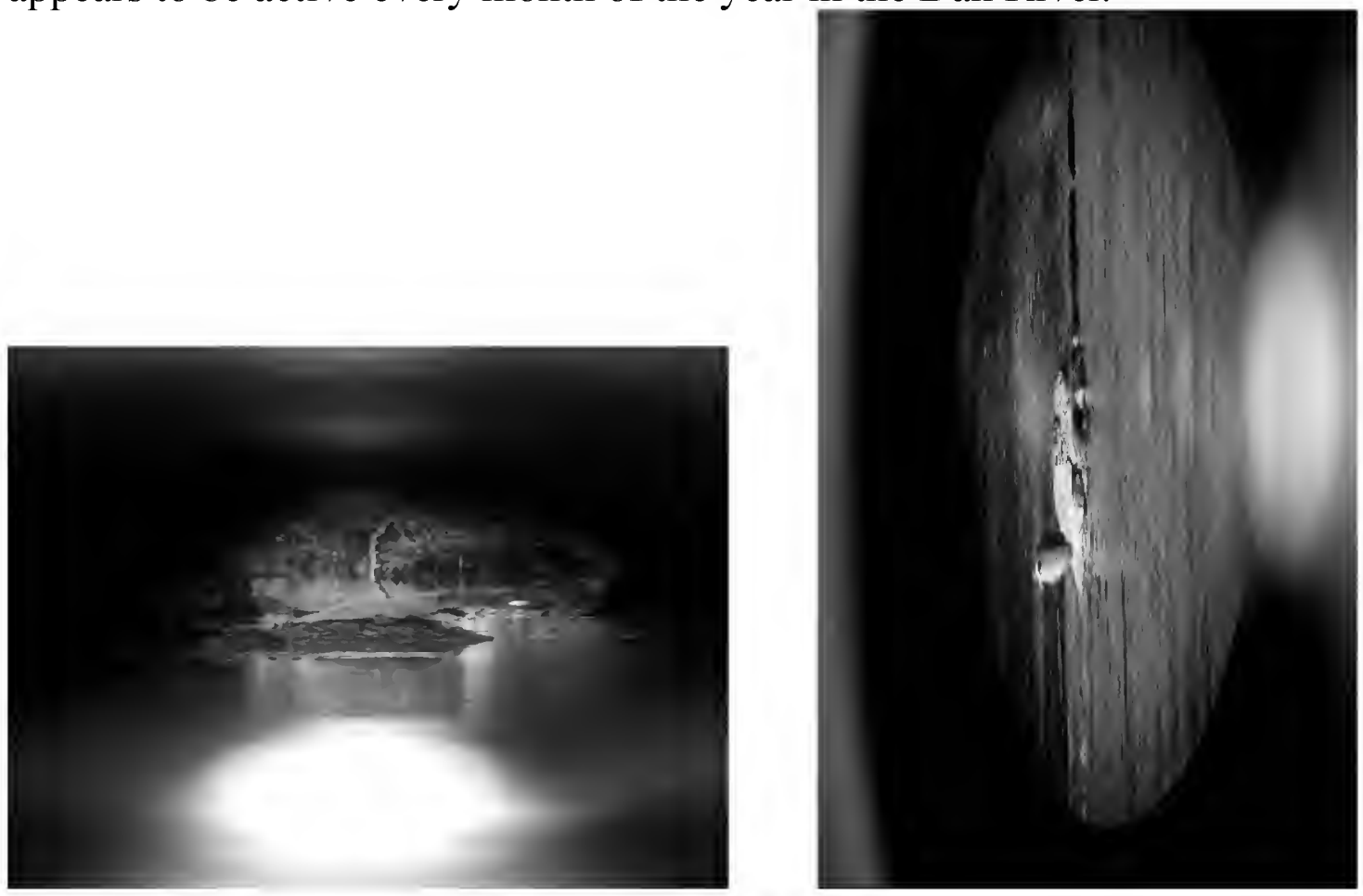
Reptiles

Chrysemys picta (Eastern Painted Turtle)

Three Eastern Painted Turtles were observed sitting on logs in the shade at 1421 h in a fishing pond found at White Oak Mountain Wildlife Management Area (36°46'52.05"N, 79°19'23.20"W) on 13 December. One neonate painted turtle (25 mm plastron length, 27 mm carapace length) was found sitting beside a flooded pond at White Oak Mountain Wildlife Management Area (36°46'43.31"N, 79°19'55.78"W) on 24 December. Major flooding of the pond occurred the day before and it is thought that maybe this hatching was disturbed from its nest and came to the surface. On 27 December two adult painted turtles were observed sitting on logs in a fishing pond at 1403 h in WOM area (36°46'52.05"N, 79°19'23.20"W). The air temperature at the time of this observation was 23.8^{0}C and skies were clear and sunny. Both Mitchell (1994) and Ernst and Lovich (2009) have observed basking turtles during all months but neither list any specific dates.

Neonate Eastern Painted Turtle found at WOM WMA on 24 December 2015.

Pseudemys concinna (Eastern River Cooter)
On 13 December one adult Eastern River Cooter was observed basking in the shade on a log at 1429 h. This turtle was observed in a fishing pond at WOM WMA (36°46'52.63"N, 79°19'24.62"W). Three turtles were observed basking on a rock in the middle of the Dan River (36°35'16.80"N, 79°23'2.71"W) at 0857 h on 16 December. On 27 December one turtle was observed basking on a log at 1415 h at the same site as the first observation in this account. The air temperature was 23.8^{0}C. The reported activity season for Virginia is March to November (Mitchell, 1994). An early record of 25 January has been recorded for the Dan River (Gibson and Gibson, 2002). This turtle appears to be active every month of the year in the Dan River.



Eastern River Cooters found at WOM WMA and in the Dan River in the City of Danville.

Storeria dekayi dekayi (Northern Brownsnake)
One Northern Brownsnake (21 cm total length, 16.2 cm SVL) was found DOR on Northside Drive in Danville Virginia (36°33'43.24"N, 79°21'30.55"W) on 24 December. This site is located adjacent to a wetland mitigation pond found in Angler's Park, a city park used for recreation. The road sits between the wetlands area and a hardwood forest. Mitchell (1994) indicates that this snake can be found in every month of the year but he gives no specific dates for December.

Northern Brownsnake for DOR on Northside Drive in the City of Danville on 24 December 2015.

Discussion

Our effort to document the effects of unusual effects of weather on herp activity is not the first. Briggs (1994) reported the effects a blizzard had on amphibians in northern Virginia in 1993. This blizzard occurred during the strong El Niño of 1992-1993. Bulmer and Cherok (1998) reported on unusual activity in *Pantherophis alleghaniensis* and *Pseudacris crucifer* during the strong El Niño of 1997-1998. Gibson, Ware, and Cramer (2008) reported on the weak El Niño of 2006-2007. They reported unusual herp activity for four anurans, two salamanders, and one turtle species. The El Niño of 2015 is different from previously reported accounts because instead of a warm early January as reported by Bulmer and Cherok (1998) and Gibson et.al (2008), the warming trend came in the month of December. In addition to full papers on El Niño events, there are many published field notes recording early activity records for various species during these events. A few examples include Pague (1983) reporting on an early observations of *Scaphiopus holbrooki* in February of 1983, Hunley (1998) reporting on *Thamnophis sirtalis sirtalis* activity in January 1998, and Olson (2007) reporting on *Bufo fowleri* early activity in 2007. Mitchell (1994) in the Reptiles of Virginia unfortunately does not give specific dates for early and late activity and reproduction records. We speculate that many of these records, which he based mainly on museum records, probably occurred during El Niño years.

This weather phenomenon may be a threat to certain species but may be beneficial to others. The intervals of occurrence are currently unpredictable but range from every two to seven years. El Niño specifically and climate warming in general has been linked with the extinction of *Bufo periglenes* (Golden Toad) and *Atelopus varius* (Harlequin Frog) in the montane forests of Costa Rica (Wake and Vredenburg, 2008). El Nino impacts the montane cloud forests with dry and warm weather which together dry up breeding ponds. According to Wake and Vredenburg (2008) species in the tropics seem to be more susceptible to these changing weather patterns because of small home ranges. Temperate species, with large home ranges seem less impacted. Pollio (2007) linked failed reproduction in *Pseudacris feriarum* with

droughts and blizzards but did not include El Niño weather events in her published summary for this species. In this report we demonstrate frogs being crushed on roads and failed egg laying in December 2015. The energy expenditure moving to breeding sites and calling during December with failing to reproduce must negatively impact stored energy reserves. Males and maybe females moving to breeding areas and having to cross roads more than once can increase mortality. Gibson et. al. (2008) showed the negative impacts of El Niño related weather on *Pseudacris feriarum*. Those authors documented egg laying in early January with subsequent freezing of eggs after the warm period subsided. Thus, El Niño could negatively impact short lived species by disrupting successful breeding and allowing for increased mortality events. This is especially true for *Pseudacris feriarum* because it uses temporary pools of water that are often shallow and may subsequently freeze to the bottom of the pool. An argument could be made though that El Niño related warmer and wetter weather could benefit species such as *Ambystoma jeffersonianum* and *Ambystoma opacum*. These are long lived species that could breed in fall or winter. When vernal pools fill up early and warm weather allows early reproduction, more reproductive success may occur in an El Niño year since these predaceous larvae would have a size advantage the following spring. Perhaps the late breeding observation of *Lithobates sphenocephalus* reported by Roble (2003) could also be tied to El Nino related precipitation. A successful fall breeding event would give this species an advantage over other competitors.

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Rock Castle Gorge BioBlitz

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Introduction

In September 2015 the Blue Ridge Parkway hosted a BioBlitz of Rocky Knob Recreation Area in Floyd and Patrick Counties. The Blue Ridge Parkway wildlife biologist, Bob Cherry, sent out an invitation for professional and amateur naturalists interested in all plant and animal wildlife to attend the event. The authors accepted the invitation and worked with the reptile and amphibian team. This report serves as an account of what our team found and a discussion of what possible species may be found in the future in this area. The BioBlitz officially lasted from 2:00 p.m. Friday 18 September to 2:00 p.m. Saturday 19 September. The main focus of this survey was Rock Castle Gorge but other areas within this recreation area were also surveyed.

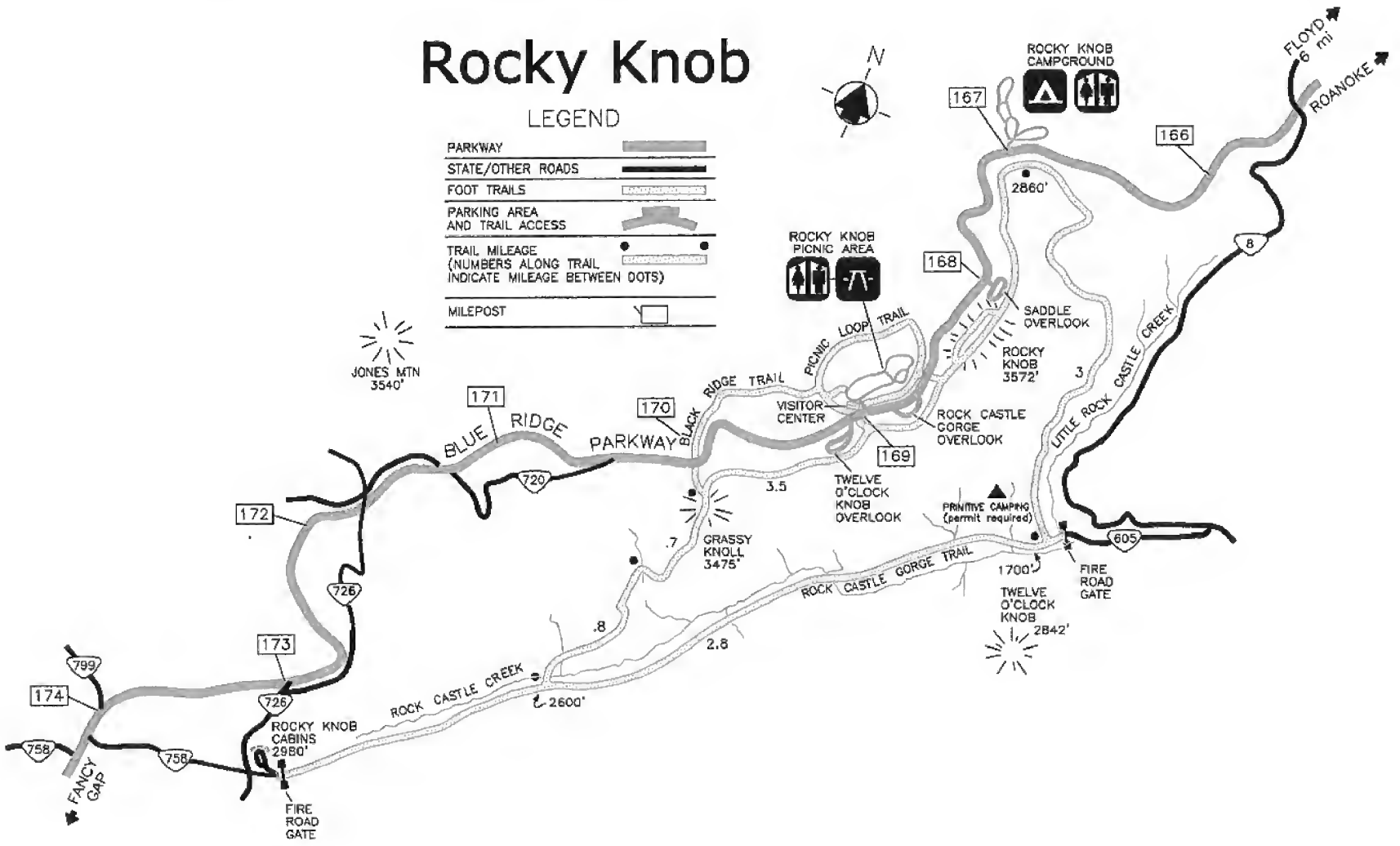
Rocky Knob Recreation Area extends from milepost 165 near Tuggles Gap to milepost 174 at Rock Castle Gap. It comprises some 1450 ha (3600 acres). This area is open to the public. There are many recreational opportunities including camping, hiking, fishing, and sightseeing. Rock Knob is found in the Blue Ridge physiographic province. It contributes water resources to both the New and Roanoke river watersheds. Elevation ranges from 567 m (1700 feet) at Rock Castle Creek to 1167 m (3500 feet) along the Parkway. This area has a mix of agricultural fields, second growth upland hardwood forests, Rhododendron thickets, seeps, streams, and bogs.

Study Sites

Site 1 Rock Castle Gorge Trail (36°48'25.92"N, 80°19'50.95"W)
This site included Little Rock Castle Creek, Rock Castle Creek, and the trail parallelling Rock Castle Creek. Rock Castle Gorge Trail is found in Patrick County. At the parking lot the elevation is 570 m (1708 feet) and gradually rises as one walks southwest. Along the trail there are seeps, small streams flowing into Rock Castle Creek, bogs, and a mixed Eastern Hemlock, White Pine, and hardwood forest surrounding all of these features. Dominant tree species include Ironwood, Basswood, Yellow Birch, Tulip Poplar, Chestnut Oak, Eastern Red Maple, Sycamore, Frazier Magnolia, Black Walnut, Northern Red Oak, Black Oak, Eastern Hemlock, Black Cherry, White Pine, Shagbark Hickory, and Pignut Hickory. There are Rhododendron thickets along some portions of the trail.

Site 2 Picnic Loop Trail (36°48'52.15"N, 80°20'51.60"W)
The second sight consists of walking trails weaving through a upland hardwood forest. These trails cross seeps and small streams. There are many downed logs and rocks serving as habitat for small snakes and salamanders. The elevation of this site is 1060 m (3186 feet) and lies in Floyd County.

Figure 1. Map showing survey area.



Materials and Methods

The following techniques were used by surveyors during the weekend survey: hand capture, visual observations, rolling over and replacing cover objects, listening for calling anurans, and road cruising at night. Animals that were hand captured were visually inspected for malformations, diseases, injury, and parasites. Salamanders were placed in ziploc sandwich bags for close inspection. Surveyors were instructed to use the bags only once. All animals if captured were immediately released at the site of capture. Digital photos were taken of all species. Data sheets with information about each animal and the survey habitat were completed by team leaders. See Table 1 for a summary of how much time was spent at each survey site.

Table 1: The amount of survey effort per research site.

	Site 1[a]	**Site 1[b]**	**Site 1[c]**	**Site 2[a]**	**Site 2[b]**
Number of surveyors	3	2	9	7	4
Hours surveyed	2	.5	4.5	2	.5
Person hours of survey effort	6	1	40.5	14	2

1[a] site visited during the day on 9-18-15, 1[b] site visited on 9-18-15 at night, 1[c] site visited on 9-19-15 during the day, 2[a] site visited on 9-18-15, 2[b] site visited on 9-19-15

Results

Over the course of two days of surveying a total of 10 species of amphibians (three anurans and 7 salamanders) and 4 species of reptiles (one turtle and 3 snakes) were observed. A combined total of 106 animals were found during the survey effort. Table 2 summarizes information about the diversity and abundance of each species found at each site.

Table 2. Summary of the number of animals observed at each site.

Sites	1[a]	1[b]	1[c]	2[a]	2[b]	Total
Species						
Amphibians						
Lithobates catesbeianus			1			1
Lithobates palustris	1	1				2
Pseudacris crucifer	1					1
Desmognathus planiceps	5	6	39	8	3	61
Desmognathus monticola		4	2	1		7
Desmognathus quadramaculatus			3	1		4
Eurycea cirrigera	2		9	4		15
Notophthalmus v. viridescens	1		2			3
Plethodon cinereus	1		1	2		4
Plethodon cylindraceus	1		2	1		4

Reptiles						
Terrapene c. carolina	1					1
Agkistrodon contortrix mokasen						1*
Diadophis punctatus edwardsi				1		1
Pantherophis alleghaniensis	1					1
Total Number of animals by site	14	11	59	18	3	106

* The *Agkistrodon contortrix m.* was found AOR on the Blue Ridge Parkway near site 2.

Annotated Checklist

Amphibians

1. *Lithobates catesbeianus* (American Bullfrog)
   On juvenile American Bullfrog was found in a small stream flowing into a bog at site 1.

2. *Lithobates palustris* (Pickerel Frog)
   Two Pickerel Frogs were found at site 1. One was in leaf litter by Little Rock Castle Creek and the other was in Little Rock Castle Creek.

3. *Pseudacris crucifer* (Spring Peeper)
   One male Spring Peeper was heard calling from the woods surrounding a bog at site 1.

4. *Desmognathus planiceps* (Flat-headed Salamander)
   Sixty-one salamanders were found at sites 1 and 2. Salamanders were found under rocks in streams, under rocks beside streams, and under rocks in seeps.

5. *Desmognathus monticola* (Seal Salamander)
   Seven adult salamander were found at sites 1 and 2. The six salamanders found at site 1 were found beside Rock Castle Creek under rocks. One adult female was gravid. The salamander found at site 2 was found under a rock sitting in a seep.

6. *Desmognathus quadramaculatus* (Black-bellied Salamander)
Three adult Black-bellied salamanders were found under rocks beside Rock Castle Creek at site 1 and one salamander was found under a rock in a seep at site 2.

7. *Eurycea cirrigera* (Southern Two-lined Salamander)
Fifteen salamanders were found during the survey at both sites 1 and 2. Salamanders were found under logs and rocks beside streams and in seeps.

8. *Notophthalmus v. viridescens* (Red Spotted Newt)
Three eft stage Red Spotted Newts were found at site one. Salamanders were found under logs and bark. One eft was observed missing a hind leg.

9. *Plethodon cinereus* (Eastern Red-backed Salamander)
Two adult Eastern Red-backed Salamanders were found at site 2 and one adult and one juvenile salamanders were found at site 1. Three of the salamanders were found under logs and one was found under a rock.

10. *Plethodon cylindraceus* (White Spotted Slimy Salamander)
Four adult slimy salamanders were found at sites 1 and 2. These salamanders were found under logs, tree bark, and one adult was found under a log in a primitive campground at site 1.

Reptiles

11. *Terrapene c. carolina* (Eastern Box Turtle)
One adult Eastern Box Turtle was found in a bog near Rock Castle Creek at site 1.

12. *Agkistrodon contortrix mokasen* (Northern Copperhead)
One Northern Copperhead was found (36^{0}48'49.15"N, 80°20'44.47"W) while cruising the Blue Ridge Parkway at night on 9-18-15. The elevation at this site was 980 m (3213 feet.)

13. *Diadophis punctatus edwardsi* (Northern Ring-necked Snake)
One adult Northern Ring-necked Snake was found under a log at site 2.

14. *Pantherophis alleghaniensis* (Eastern Ratsnake)
    One adult Eastern Ratsnake was found basking beside Rock Castle Gorge Trail at site 1. On 19 September a DOR Eastern Ratsnake was found .5 miles north of the visitor center on the Blue Ridge Parkway.

Discussion

The Rocky Knob survey on the Blue Ridge Parkway was a geographically and time limited event. It covered two areas, each less than than 250 hectares (600 acres), and a 24 hour time period. During that time a total of 10 amphibian species (3 anurans and 7 salamanders) and 4 reptile species (1 turtle and 3 snakes) were observed by the 15 participants. These areas are on the southeastern edge of the Blue Ridge Physiographic Province and are high elevation sites, particularly site 2 at just over 1000 m. At this high-elevation, cool site, amphibians predominate over reptiles as seen by our data (Table 2). Both Patrick and Floyd Counties have a good herpetofauna, with 50 species recorded for Patrick and 39 for Floyd. Amphibians predominate in both, at least slightly, with 26 amphibians and 24 reptile species for Patrick, and 25 amphibians and 14 reptiles for Floyd.

The ten species recorded during our survey do not represent any new records or unusual finds. All species observed were previously recorded for the counties. The real benefit of the survey was to document the species found at the Rocky Knob area of the Blue Ridge Parkway, and represented part of a larger effort to document all the different taxonomic units occurring there.

There have been other herpetological surveys in the Blue Ridge Physiographic Province. Fredericksen et al. (2010) used pitfall traps to compare small terrestrial vertebrates, including amphibians and reptiles, in two different forest types. They found 17 amphibian species and 10 reptiles in Franklin County, about 30 km east of our Blue Ridge Parkway sites. They found all the species we found near the Parkway except *Desmognathus quadramaculatus, Plethodon cinereus,* and *Agkistrodon contortrix*. Gibson and Sattler (2007) and Fredericksen and Boyd (2012) sampled Fairystone State Park about 30 km. east of the Parkway in Patrick County. Fredericksen and Boyd were comparing two different forest types and did not include any streamside salamanders, but recorded 9 amphibian and 7 reptile species. Gibson and Sattler (2007) reported on the first herp blitz at Fairystone and recorded 17 amphibian and 12 reptile species, including all species except *Desmognathus quadramaculatus*. Garriock et al. (1996) reported 18 amphibian and 10 reptile species in different locations in Floyd County encountered during Bog Turtle surveys. They found most of the same species as our Parkway survey, except *Desmognathus quadramaculatus, Eurycea cirrigera,* and *Diadophis punctatus.* Sattler and Gibson (2010) summarize the results of three surveys over three years in Pulaski County, just north of Floyd County in the Ridge and Valley Physiographic Province. They found 19 amphibian species and 8 reptile species, including all species found at Rocky Knob except *D. planiceps/fuscus* and *Plethodon cinereus*, although *P. cinereus* and *P. wehrlei* are parapatric, and *P. wehrlei* was found.

Two species are of particular interest. The range for *Plethodon yonahlossee* has not changed much since Hoffman (1992) described it. He mentioned three sites in Floyd County, the easternmost on Buffalo Mountain, is about 12 km. northwest of Rocky Knob. Another Yonahlossee site is located about 18 km. south of Rocky Knob at the Pinnacles of Dan in Patrick County. Rocky Knob is just east of the known range for the Yonahlossee Salamander and we were hoping it might extend to this high elevation site on the Blue Ridge Parkway. Site 2 up on

the Parkway itself is high elevation and includes some Rhododendron thickets, which seem to be associated with this species. Hoffman (1992) suggested they may be expanding their range eastward but that may be limited by human development. With two populations within 20 km of Rocky Knob, we had hoped to add another location to its range, however, we did not find it during our survey.

Another species of interest is *Desmognathus planiceps*. This species was recently described (Tilley et al., 2008) and is a cryptic species to *Desmognathus fuscus*. Morphologically, they are indistinguishable except for some dental characteristics which require an electron microscope to discern. They differ at several molecular traits, so mitochondrial DNA or isozyme protein electrophoresis analysis is required to correctly identify them. Two of the sites sampled by Tilley et al. (2008) are just northeast and northwest of Rocky Knob. The authors used protein electrophoresis (unpublished data) to determine *Desmognathus planiceps* occurs at Fairystone Farms Wildlife Management Area 20 km southeast of Rocky Knob. That puts the *Desmognathus* at Rocky Knob squarely within the range of *D. planiceps* rather than *D. fuscus*. Specimens from the area previously identified as *D. fuscus* are most likely *D. planiceps*. Unfortunately, molecular analysis is required to correctly identify and separate these species.

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Acknowledgments

We would like to thank the Blue Ridge Parkway staff for organizing this event. We thank all the volunteers who came out to help find amphibians and reptiles including: Stephanie Crawford, Marielle DeJong, Linda Gette, Jason Gibson, Kal Ivanov, Joe Klein, Ethan Leedom, Ryan Leedom, Amanda Morgan, Bob Rebmann, Dennis Ross, Steve Roble, Joe Sapienza, Paul Sattler, and Jack Walker.

Field Notes

Clemmys guttata (Spotted Turtle) VA: Prince William Co., Occoquan Bay National Wildlife Refuge (roughly 38.636613, -77.232598). 8 May 2016. Barbara J. Saffir and Nancy Hwa.

County Record: A Spotted Turtle was previously observed during at least one Audubon survey by naturalist Jim Waggener at the Occoquan Bay National Wildlife Refuge, but the sighting on 8 May was the first time to our knowledge that it was documented with photographs. Barbara Saffir and Nancy Hwa both photographed it with digital cameras at 9:34 a.m. during a Sierra Club hike in a small body of water on the inland side of Deephole Point Road. Photos were emailed to the VHS, where it was entered into the Archives (# 383). Spotted Turtles are known from Fairfax County to the north and Fauquier County to the south, but there are no previous records from Prince William County (Mitchell, J.C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C.352 pp.; Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.).

Barbara Saffir
Fairfax County

***Hyla chrysoscelis* (Cope's Gray Treefrog)** VA: Smyth County, 202 Spring Valley Road, Marion VA. 20 June 2016. Sharon Dishner.

County Record: In 2015 I had an ornamental pond installed on our property in Marion, VA. I had not seen any frogs around it, but saw tadpoles around the end of May this year, and heard frogs calling. On 20 June 2016 I was cleaning the filter on the pond and noticed a small frog sitting on the shelving under the filter lid. I photographed the frog, and later while he was calling made a digital recording of the call. When both were submitted to the VHS for identification, I was told it was *Hyla chrysoscelis*, Cope's Gray Treefrog, and it represented a new record for Smyth County. The species is reported from Washington County to the west, but no voucher exists for Smyth (FWIS Database, Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.). Digital recordings of the photo and call were deposited in the VHS Archive (#396).

Sharon Dishner
202 Spring Valley Road
Marion, VA 24354

***Hyla chrysoscelis* (Cope's Gray Treefrog)** VA: Culpeper, State Route 619 (Richard's Ferry Road) (38^0 24' 05.07" N, 77^0 42' 00.21" W). 31 May 2016. Brian Munford

County Record: On 31 May 2016, at approximately 22.45h, while conducting opportunistic survey work, a Cope's Grey Tree Frog chorus was noted and recorded. This observation is a new county record and represents a westward expansion of the known range of the species in northern Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 384)

Brian Munford
4021 Northrop Street
Richmond, VA 23225

***Hyla chrysoscelis* (Cope's Gray Treefrog)** VA:Fauquier County, State Route 823 (Spring Mill Road) (38^0 25' 22.49" N, 77^0 38' 30.70" W). 31 May 2016. Brian Munford

County Record: On 31 May 2016, at approximately 22.10h, while conducting opportunistic survey work, a Cope's Grey Tree Frog was noted and recorded. This observation is a new county record and represents a westward expansion of the known range of the species in northern Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 385)

Brian Munford
4021 Northrop Street
Richmond, VA 23225

***Hyla chrysoscelis* (Cope's Gray Treefrog)** VA:Buckingham County, near Bridgeport, State Route 652 (Bridge Port Road) (37^0 42' 34.70" N, 78^0 20' 04.29" W). 2 June 2016. Brian Munford

County Record: On 2 June 2016, at approximately 23.30h, while conducting opportunistic survey work, a Cope's Grey Tree Frog was noted and recorded. This observation is a new county record and represents a westward expansion of the known range of the species in central Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 386).

Brian Munford
4021 Northrop Street
Richmond, VA 23225

Hyla chrysoscelis **(Cope's Gray Treefrog)** VA:Fluvanna County, State Route 656 (Bremo Road) (37^0 42' 46.09" N, 78^0 16' 29.83" W). 2 June 2016. Brian Munford

County Record: On 2 June 2016, at approximately 23.50h, while conducting opportunistic survey work, a Cope's Grey Tree Frog was noted and recorded. This observation is a new county record and represents a westward expansion of the known range of the species in central Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 387)

Brian Munford
4021 Northrop Street
Richmond, VA 23225

Hyla chrysoscelis **(Cope's Gray Treefrog)** VA: Orange County, State Route 667 (Vaucluse Road) (38^0 20' 47.457" N, 77^0 43' 41.53" W). 31 May 2016. Brian Munford

County Record: On 31 May 2016, at approximately 22.20h, while conducting opportunistic survey work, a Cope's Grey Tree Frog call was noted and recorded. This observation is a new county record and represents a westward expansion of the known range of the species in northern Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 388)

Brian Munford
4021 Northrop Street
Richmond, VA 23225

Hyla squirella **(Squirrel Treefrog)** VA: Henrico Co., Carter's Mill Road (State Route 606) (37^0 23' 19.29"N, 77^0 13' 37.16"W); Willis Church Road (State Route 156) at New Market Road (State Route 5) (37^0 24' 20.46"N, 77^0 15' 54.76"W); and, on Turkey Island Road (37^0 23' 53.89"N, 77^0 15' 59.84" W) . 25 June 2016. Brian Munford

County Record: On 25 June 2016, at approximately 00.15h, 00.25, and 00.35, while conducting opportunistic survey work, three squirrel treefrog choruses were noted and recorded. These observations are a new county record and represent a northwestern expansion in the distribution of this species in Virginia (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) Squirrel Treefrogs are known from King William County to the North; James City, Charles City, and Surry Counties to the east, and Prince George and Chesterfield Counties to the south (FWIS Database; Munford. 2015. Hyla Squirella Field Note. Catesbeiana

35(2):66 and Munford. 2014. Hyla squirella Field Note. Catesbeiana 34(2):71). Digital recordings have been deposited in the VHS archives (Digital vouchers # 389-391).

Brian Munford
4021 Northrop Street
Richmond, VA 23225

***Hyla squirella* (Squirrel Treefrog) VA:** New Kent County, Mount Castle Road (State Route 615) and South Garden Road (State Route 631). (37 27' 36.48" N, 77 05' 48.36" W) 16 June 2016. Brian Munford

County Record: On 16 June 2016, while conducting opportunistic field survey work in New Kent County, a Squirrel Tree frog chorus was heard and recorded. This observation constitutes a new county record for this species and fills a gap in the distribution between Henrico County to the west and known populations in King William County to the North, James City County to the east, and Henrico County to the west (Mitchell, J.C. and K.K. Reay 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp; Tobey, F. 1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Society, Purcellville, VA. 114 pp; Munford 2016 Hyla Squirella Field Note, Catesbeiana 36(2):71-72; and the Virginia Department of Game and Inland Fisheries wildlife database). Digital recordings of Squirrel Treefrog choruses have been deposited in the VHS archive (# 392)

Brian Munford
4021 Northrop Street
Richmond, Virginia 23225

***Lithobates virgatipes* (Carpenter Frog)** VA: Southampton Co., Lightwood Swamp, State Route 601 (Kellos Mill Road) at 605 (Millfield Road) (36^0 53' 02.63" N, 76^0 58' 16.77" W). 3 May 2016. Brian Munford

County Record: On 3 May 2016, at approximately 22.15h, while conducting opportunistic survey work, a carpenter frog chorus was noted and recorded. This observation is a new county record and helps fill a hiatus in the distribution map of this little-documented species in Virginia between known populations in Suffolk City to the east and Sussex County to the northwest (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) A digital recording has been deposited in the VHS archives (Digital voucher # 393)

Brian Munford
4021 Northrop Street
Richmond, VA 23225

***Hyla femoralis* (Pine Woods Treefrog)** VA: Matthews Co., State Route 660, East River Road (37^0 26' 14.65"N, 76^0 22' 47.22" W), and State Route 626, Ridge Road (37^0 28' 20.40"N, 76^0 23' 16.85"W). 21 June 2016. Brian Munford

County Record: On 21 June 2016, at approximately 21.20h and 21.45h, while conducting opportunistic survey work, two pine woods treefrog choruses were noted and recorded. This observation is a new county record and fills a hiatus in the distribution map of this species in Virginia between populations to the east in King and Queen, King William and New Kent Counties, and those in Virginia Beach, Suffolk, and Chesapeake to the south. (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) Digital recordings have been deposited in the VHS archives (Digital voucher # 394-395).

Brian Munford
4021 Northrop Street
Richmond, VA 23225

Scaphiopus holbrookii (Eastern Spadefoot) VA: Roanoke Co., Salem (37.299052, -80.036299). 1 June 2016. Elizabeth D'Imperio

County Record: A Spadefoot Toad was unearth while digging in my backyard garden. After trying to dig up what was thought to be a hard rock several inches under the surface, the toad appeared in the soil. There had been little rain for the time period before this and the ground was rather dry, so it is likely that the toad had encased itself and was dormant at the time I found it. After finding the toad it was photographed and then released to another area of the garden under plant cover and sprinklers were turned on to make sure the surrounding area was moist. Another hard section of soil was found a few feet away indicating there may be more toads but this was not verified.

Spadefoot Toads have been reported from Botetourt County to the north, Franklin County to the south, and northwestern Montgomery County to the west, but not Roanoke (FWIS Database). This record fills a gap in the distribution of this species. Digital photographs (#381) were deposited in the VHS Archive as a voucher.

Elizabeth D'Imperio
Salem, Va

Kinosternon subrubrum subrubrum (Eastern Mud Turtle)VA, Northumberland County, 1269 Pumpkin Hill Road, near intersection of US360 and VA640. N37^0, 52',21" and W 76^0, 22' ,04". 16 June 2016 Temple Moore

County Record: Our property is located on Bett's Mill Creek and the gravel access road is approximately 40 m. from the creek and at least 7 m. above the water. Each spring, several species of turtles, e.g. Mud, Red-bellied and Snapping Turtles, come up to lay eggs on our lane. In the past, I have observed at least two separate animals of each species making this journey. On 16 June 2016 I observed a Mud Turtle on the lane and photographed it. There are no vouchered reports of Mud Turtles from Northumberland County (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp) although Mitchell, (1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C.352 pp.) does list an unvouchered record. A digital photo was submitted to the VHS as a voucher (Archive # 397).

Temple Moore
207 N Fairfax Street
Alexandria VA 22314

Chelydra Serpentina (Snapping Turtle) VA Northumberland County, 1269 Pumpkin Hill Road near intersection of US360 and VA640 (N37^0, 52' , 21", W76^0, 22', 04"). 12 June 2016. Temple Moore.

County Record: Our property in Northumberland County is located approximately 40 m. from Bett's Mill Creek. In summer we regularly see turtles coming into our lane to lay eggs. On 12 June 2016 I observed and photographed a Snapping Turtle laying eggs. There is no vouchered record for Northumberland County (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) although Mitchell (1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C.352 pp.) includes an unvouchered record for the Snapping Turtle. The photo was deposited in the VHS Archives (#398) as a voucher to verify the occurrence of this species in Northumberland County

Temple Moore
207 N. Fairfax Street
Alexandria, VA 22314
Tel 703-683-3328

Chelydra serpentine (Snapping Turtle) VA: Northumberland County, 174 Bayberry Point Lane Kilmarnock, May 31, 2016, Denise and Richard Neilson.

County Record: Our property is in Kilmarnock County along Indian Creek and a shallow wetlands. On May 30, 2016 we observed a Snapping Turtle crossing our yard, apparently looking for a nesting site as she dug into the soil a few inches then moved on. The turtle was photographed and the photo sent to the VHS for positive identification. We were notified it was a Snapping Turtle and there was no vouchered record for Northumberland County (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) although Mitchell (1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C.352 pp.) includes an unvouchered record. The photo was entered into the VHS Archives (#399).

Richard P. Neilson
174 Bayberry Point Lane
Kilmarnock, VA 22482

Aspidoscelis sexlineata sexlineata (Eastern Six-lined Racerunner): VA, Shenandoah Co., Three Top Mountain at 230 m (38.95233N -78.26511W). 29 May 2015. Lance H. Benedict

County Record: Although the range of the Eastern Six-lined Racerunner extends as far north as Allegany Co, MD (Harris H.L.Jr. 1975. Bull MD Herp Soc 11(3):108), the northernmost Virginia record in the Ridge and Valley province was only recently reported by Benedict (Catesbeiana 34(2):72) in southern Bath County. Furthermore the northernmost Blue Ridge and Piedmont province records in Virginia are at similar latitude in Augusta and Albemarle Counties respectively (Mitchell J.C. and Reay K.K. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries. Richmond, VA 122pp.).

While investigating a shale barren on the west side of Massanutten Mountain just south of Strasburg, I encountered an Eastern Six-lined Racerunner on the steep slope abutting the North Fork Shenandoah River, some 70 m above river elevation. Although this find does not represent a range extension for the species, the nearest records in the Virginia Piedmont, Blue Ridge, or Ridge and Valley Provinces are over 100 km south.

The late Richard Hoffman was of the opinion that Eastern Six-lined Racerunners extend their range via railroad tracks. Indeed there is a railroad some 4 km northeast of the present record; however, even the nearest Coastal Plain records (Prince William and Caroline Counties) are over 100 km east. Harris suggested that Maryland populations expanded their distribution by following the Potomac River valley westwards; however, no other records have been confirmed between Prince Georges and Allegany Counties in Maryland. In the author's opinion, the current record represents a link between the Ridge and Valley populations in Bath County, Virginia and Allegany County, MD. It is worth noting that all three populations are associated with shale barrens.

The Eastern Six-lined Racerunner has not been previously documented for Shenandoah County by Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries. Richmond, VA 122pp.) or the Virginia Herpetological Society (http://www.virginiaherpetologicalsociety.com/cgi-bin/herplist/action.php). A digital photograph of the specimens was submitted to the VHS archives (#400).

Lance H. Benedict
1918 Birch Rd
McLean, VA 22101

Eurycea longicauda **(Long-tailed Salamander)** VA: Nelson Co., Claudius Crozet Blue Ridge Tunnel (38° 1' 49.1232" N, 78° 51' 10.5192" W). 28 May 2016. Matthew Neff, Allen Hale, Lisa Hamilton, Brian Balik.

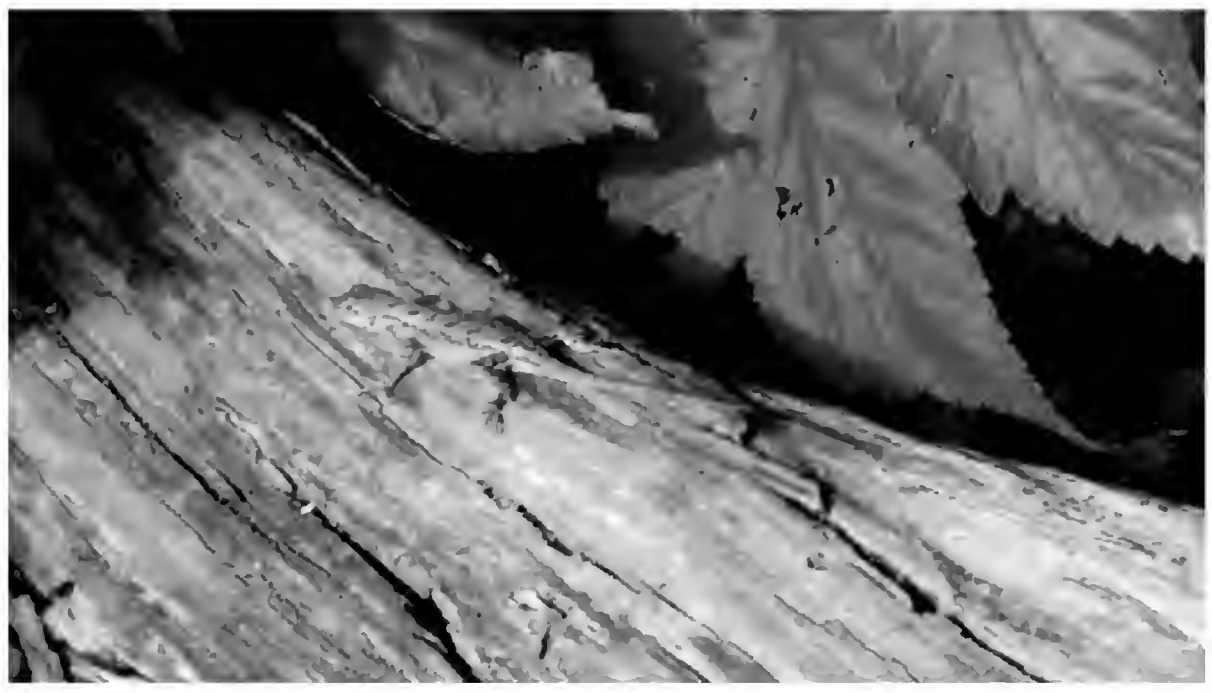
County Record: On 28 May 2016 at approximately 10.30h while conducting survey work, approximately 20 Long-tailed Salamanders were observed in the twilight zone of the Claudius Crozet Blue Ridge Tunnel, along with a Spring Salamander, American Toad, and Gray Treefrog. The observation of the Long-tailed Salamander is a new county record and has not been previously documented for Nelson County by Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries. Richmond, VA 122pp.) or the Virginia Herpetological Society (http://www.virginiaherpetological society.com/amphibians/salamanders/long-tailed-salamander/long-tailed_salamander.php). A digital photograph of the specimen was submitted to the VHS archives(# 401).

Matthew Neff
Department of Herpetology
National Zoological Park
Smithsonian Institution
MRC 5507, Washington, DC 20013

***Sceloporus undulatus* (Eastern Fence Lizard)**: VA: Clarke County, Town of Berryville (39 9' 10.7814" N, 77 58' 13.5582" W) 30 June 2016 Christina Kraybill.

County Record: I spotted a small lizard on our home property several days prior to obtaining a photograph for identification. The lizard was spotted on an old maple trunk that is decaying in our berry patch in an area we call "The Bird Sanctuary." The lizard seemed relaxed and interested in studying me as well. My husband commented that he saw a "gecko" dart from the garage to "The Bird Sanctuary" a few days ago. While trying to identify the lizard, I came across the Virginia Herpetological Society's website. After reviewing all of the known lizards in Virginia, I thought that we must have an Eastern Fence Lizard. I submitted the photographs for identification. John White, from the VHS, confirmed that we had a female Eastern Fence Lizard. He also congratulated me on discovering a new county record for Clarke County Va. There is no previous record in Mitchell and Reay (1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) although Mitchell (1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C.352 pp.) lists an unvouchered record for Clarke County. A digital photograph was submitted to the VHS Archive (#402) as a voucher.

Christina Kraybill
Town of Berryville
Clarke County VA 22611



***Agkistrodon contortrix mokasen* (Northern Copperhead)** VA: Culpeper Co., 22527 Bach Blvd., Richardsville. 4 August 2016. James Brubaker.

County Record: While mowing the grass on my riding lawn mower on the evening of 4 August 2016, I happened upon what appeared to be a copperhead near my barn. As I have small children who play in that area, I dispatched the snake. I took a photo of the snake and sent it to the Virginia Herpetological Society for verification of the species and was informed it was a Copperhead and they had not been previously reported for Culpeper County. While they have been reported from all surrounding counties (Mitchell J.C. and K.K. Reay, 1999, Atlas of Amphibians and Reptiles in Virginia, Special Publication No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA, 122 pp.) there is no vouchered record for Culpeper, although Mitchell (1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C.352 pp.) lists an unvouchered record. The photograph was deposited in the VHS Archive (#403) as a voucher.

James Brubaker
Richardsville, VA 22736

***Lampropeltis elapsoides* (Scarlet Kingsnake)** VA: Nelson County. 29 August 2015. Locality information withheld. John D. Kleopfer.

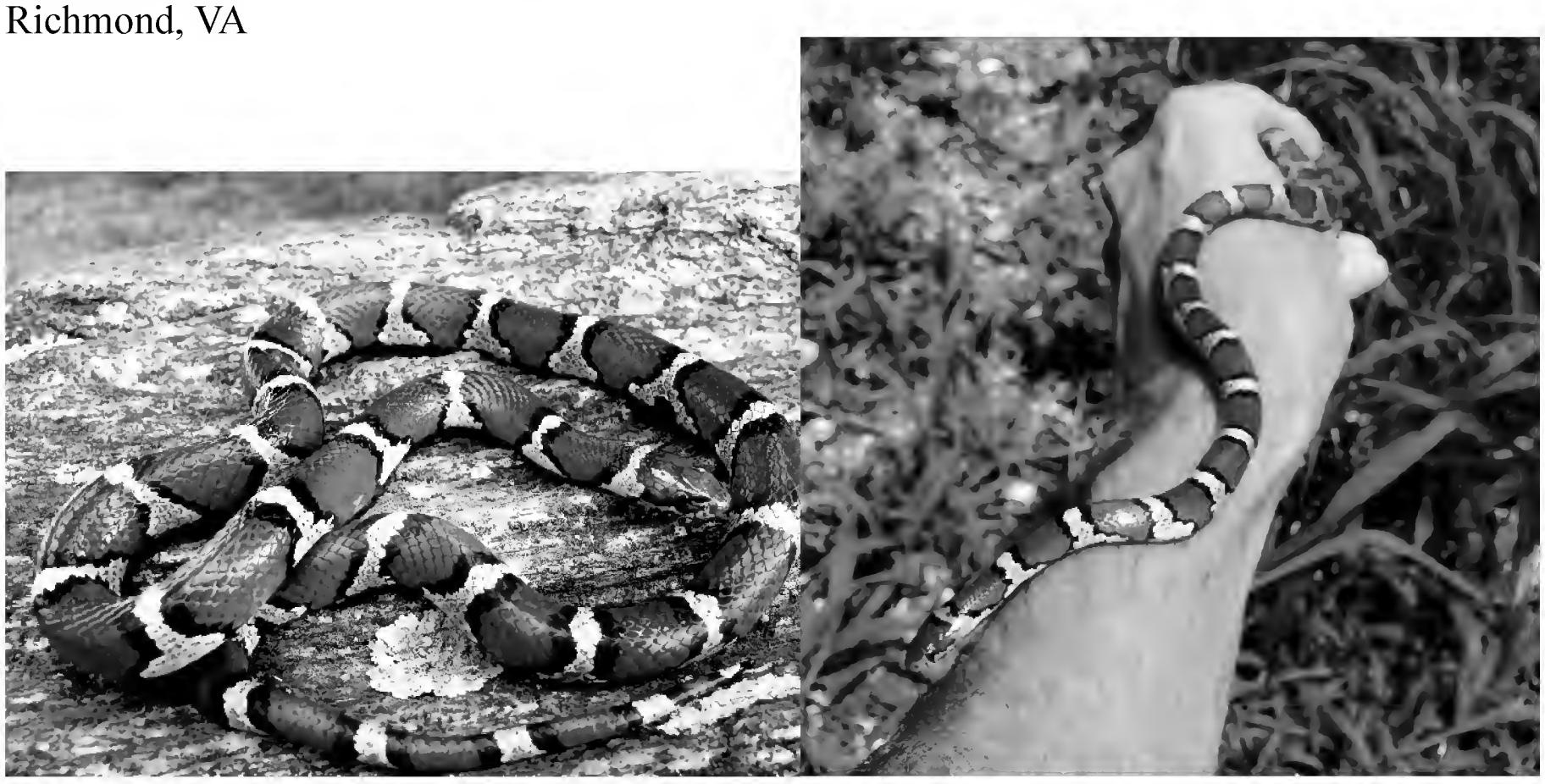
County Record: The presence of the Scarlet Kingsnake (*Lampropeltis elapsoides*) in Virginia has been in question for many years. Mitchell (1994. Reptiles of Virginia. Smithsonian Institution Press, Washington, DC. 352 pp.) concluded that everything north of the Pamlico Sound in North Carolina were intergrades with the Eastern Milksnake (*L. t. triangulum*). However, this was based on phenotypic characteristics and Mitchell acknowledged that identifying individuals based on patterns is problematic. He considered the Eastern Milksnake to exhibit the most extreme geographic variability in body size, pattern and color of any Virginia snake. Roble et al. (Roble S. M., Woodie, G. N., and M. D. Kinsler. 2007. Discovery of a Population of Scarlet Kingsnakes (*Lampropeltis triangulum elapsoides*) in the Virginia Piedmont. Catesbeiana 27: 84-94.) published the first confirmed observations of Scarlet Kingsnakes in Virginia, which was based on the genetic analysis of Harper (Harper, G. R., Jr. 2006. Evolution of a snake mimicry complex.

Ph.D. dissertation, University of North Carolina, Chapel Hill, NC. 146 pp.) and the range map of Harper and Pfenning (Harper, G. R. Jr., and D. W. Pfennig. 2007. Mimicry on the edge: why do mimics vary in resemblance to their model in different parts of their geographic range? Proceedings of the Royal Society of London, Series B 274:1955-1961.). However, tissues samples from Virginia for Harper's investigation were limited to specimens from Bedford County.

On 16 March 2015, a snake was found in the stacked-stone crawlspace of a house and brought to the attention of a Master Naturalist who asked for help in identifying the specimen. The snake appeared to be either an Eastern Milksnake or Scarlet Kingsnake. The uncertainty was based on an admixture of phenotypic characteristics. While the head appeared to be of a Scarlet Kingsnake, the ventrum was more characteristic of an Eastern Milksnake. After photos were reviewed by several reputable biologists that had extensive experience with these species, no definitive consensus was concluded. Tissue samples were taken from this specimen and another specimen captured earlier in the year from the same location for genetic analysis in the Dyer Lab at Virginia Commonwealth University. Based on mitochondrial (Cytochrome-b) DNA analysis, both specimens were clearly Scarlet Kingsnakes. This extends the known range of this species approximately 75 kilometers north along the east slope of the Blue Ridge physiographic province. It also brings into question specimens from this region previously identified as the "banded phase" of the Eastern Milksnake. Further investigation into the status and distribution of Scarlet Kingsnakes in Virginia is warranted. Photos of both specimens have been deposited in the VHS archives (#379, #380).

John (J.D.) Kleopfer
Virginia Department of Game and Inland Fisheries
3801 John Tyler Highway
Charles City, Va. 23030

Rodney J. Dyer, PhD
Department of Biology
Virginia Commonwealth University
Richmond, VA



President's Corner

Greetings my fellow herp enthusiasts,

Wow! We had a very busy spring and summer! I want to personally thank everyone who showed up to our events. Without your help, these surveys would not have been a success. As with every fall, I often wish I had better utilized the warmer months. This year is no different as I was only able to make it to our annual survey. In spite of this, the other surveys were handled by experts who made sure they went off without a hitch. I would like to think Dave Perry, Jason Gibson and Matt Neff for organizing these events. This was certainly one of the VHS's busier years.
Our annual survey was held at Natural Bridge (now a state park). This property presented us with a unique opportunity to interact with the public as we found various species along their main trail. One of the hits was an eastern ratsnake which measured a little less than six feet. It decided to practice some amateur phlebotomy on me as we were showing it to a group of guests, but even that illustrated just how little damage occurs from a bite. In total, we documented fifteen species of reptiles and fourteen species of amphibian. The caves on the property were an added bonus as they presented us opportunities to find herps while also appreciating some of Virginia's natural geology.

Dave Perry conducted two surveys at Chickahominy Wildlife Management Area in Charles City County. I was not able to attend these surveys, but Mark Khosravi posted a video of them pulling snake after snake from underneath some cover. I can't lie, I was certainly jealous of everyone when I saw this video. In total, the WMA yielded eleven amphibian species and nine reptile species on the first weekend and eight amphibian species and fourteen reptile species on the second weekend.

Jason Gibson held his annual HerpBlitz at Stewarts Creek Wildlife Management Area in Carroll County. The group was able to document 111 specimens on the property with thirteen amphibian and three reptile species. The survey was salamander heavy with nine different species being found. County records were recorded for *Anaxyrus americanus* and *Pseudacris crucifer.*

Matt Neff conducted two surveys this year. The first was in the spring at The Quarry Gardens in Nelson County. This property yielded nine amphibian and eight reptile species. Of particular note is *Scincella lateralis* which is a new county record. Matt just recently held a second survey at the Dixie Caverns in September. We are eagerly awaiting the results of this survey once Matt is back in the country.

As many may have noticed, we implemented new disinfection protocols for our 2016 surveys. This involved cleaning shoes and equipment with either a 10% bleach solution or Nolvasan. Overall, this worked really well with only some minor procedural hiccups. We will continue to do this for future surveys, but we are discussing methods to make the process go smoother for larger groups.

As we slow into the winter months, our focus will shift to future survey sites for 2017. It might be hard to top the lineup from 2016, but we will certainly try our best. We have already targeted some areas which will be discussed in more detail at the fall business meeting. We are always open to suggestions, so if you have any ideas, please do not hesitate to contact me directly.

Literature of Interest

I hope everyone enjoys the winter months, and I look forward to next spring when we can get back out in the field.

Mike Salotti
VHS President

Literature of interest to Virginia Herpetology:

Haines-Eiten, Eli. 2015. *Plethodon cinereus* (Eastern Red-backed Salamander) Coloration. Natural History Notes. Herpetological Review 46(4):610.

Jensen, John. 2015. *Terrapene carolina* (Eastern Box Turtle) Color and Pattern. Natural History Notes. Herpetological Review 46(4):621-622.

Karavlan, Stephanie A. and Matthew D. Venesky. 2016. Thermoregulatory behavior of *Anaxyrus americanus* in response to infection with *Batrachochytrium dendrobatidis*. Copeia 104(3): 746-751.

Mitchell, Joseph C. and Christopher A. Pague. 2016. Herpetofaunal and small mammal assemblages along a terrestrial moisture gradient in northern Virginia. Banisteria 46:3-11.

Tupper, Todd A. et al. 2016. A survey of amphibians at the Smithsonian Environmental Research Center, Anne Arundel County, Maryland. Banisteria 46:12-24.

Edwards, Elise. et al. 2016. Estimating Spring Salamander detection probability using multiple methods. J. Herpetology 50(1):126-129.

Buchanan, Scott W. 2016. Surface activity and body temperature of Eastern Hognose Snakes (Heterodon platirhinos) at Cape Cod National Seashore, Massachusetts USA. J. Herpetology 50(1):17-25.

Tilley, Stephen. 2016. Patterns of genetic differentiation in woodland and dusky salamanders. Copeia 104(1):8-20.

Pierson, Todd. et al. 2016. Detection of an enigmatic Plethodontid salamander using environmental DNA. Copeia 104(1):78-82.

Camp, Carlos and Jessica Wooten. 2016. Hidden in plain sight: Cryptic diversity in the Plethodontidae. Copeia 104(1):111-117.

Smith, Lisa. and Robert Cherry. 2016. Hibernation ecology of an isolated population of Bog Turtles, *Glyptemys muhlenbergii*. Copeia (2):475-481.

White, Leann et al. 2016. Amphibian: A case definition and diagnostic criteria for Batrachochytrium salamandrivorans Chytridiomycosis. Herp. Review 47(2):207-209.

Roble, Stephen. 2016. *Chrysemys picta picta* (Eastern Painted Turtle). Geographic Distribution. Herp. Review 47(2):252.

Roble, Stephen. 2016. *Sternotherus minor peltifer* (Stripe-necked Musk Turtle). Geographic Distribution. Herp. Review 47(2):255.

Smith, Walter. 2016. *Gyrinophilus porphyriticus* (Spring Salamander) Defensive Behavior. Herp. Review 47(2):276.

Virginia Herpetological Society
Spring Business Meeting-Natural Bridge
Minutes of Meeting

Mike Salotti, President of the Virginia Herpetological Society (VHS), opened the meeting at approximately 18:10 hr. EDT and provided the agenda for the meeting.

Old Business

Mike Salotti mentioned that VHS had made several large capital outlays since the Annual Meeting on October 24, 2015. A $1,000 down payment has been provided to Joe Mitchell for the development of a Virginia Herpetological bibliography dating to the mid-17th century. An additional payment of $3,500 is due to be paid to Joe Mitchell upon completion. VHS also purchased four display cages, which are being maintained by Larry Mendoza. Other major expenditures included posters for John White for sign postings at various northern Virginia park locations and for Kory Steele for Riverfest in Waynesboro.
Decontamination practices for all VHS field surveys will be implemented using Nolvasan and 10% bleach solutions. All footwear and equipment such as snake hooks and field sticks will be decontaminated prior to use.
Special emphasis will be placed on securing liability waivers from all survey participants. Survey team leaders will be responsible for obtaining the signed waivers from each team participant.

Committee Reports

Newsletter Report

Newsletter Co-Editors Susan Watson and Joellen Welch were unable to attend the meeting. Mike Salotti reported that the publication frequency for the Newsletter was being reduced from four to three annual issues and will most likely be published in April, August and December each year. Paul Sattler commented that the most recent Newsletter and Catesbeiana editions were published together on May 25. He recommended that distribution of these publications should be staggered. Mike Salotti indicated the original plan was to publish the Newsletter in March, but there had been some software issues. The Newsletter was made available to VHS friends on Facebook prior to membership mailing. Hence, there was a need to also send out the Newsletter on May 25. Steps will be taken to make certain that all future Newsletters will be emailed to VHS membership several days prior to posting on Facebook.
It was agreed that the publication of future editions of Catesbeiana and the Newsletter would be staggered and the next edition of Catesbeiana would be published in mid-October prior to the Fall Annual Meeting.

Catesbeiana

Paul Sattler, Editor of Catesbeiana, reported that one article and several field notes had already been received for publication. In addition, future reports for the spring surveys at Chickahominy WMA, Stewarts Creek WMA, The Quarry Gardens, Natural Bridge and a survey Rachel Goodman has competed at Hampden-Sydney College, should provide ample publication material for the next two editions of Catesbeiana.
There are now only 11 printed copies with each publication. Eight printed copies are mailed to various libraries, Jason Gibson and Paul Sattler each receive one printed copy and one is placed

in the archive. David Perry mentioned that he has two cartons of printed back issues of Catesbeiana stored in his basement and requested disposition guidance. There was no clear consensus recommendation about the potential future use of these back issues.

Education
Mike Clifford, Education Committee Chair, was unable to attend the meeting but will provide the annual Education Committee Report at the Fall Annual Meeting.

Café Press
Kelly Geer, Café Press Coordinator, was unable to attend the meeting. 2016 Café Press Commissions totaled $28.87. Kory Steele mentioned that VHS earns a very small commission on Café Press sales but receives marketing and distribution benefits and the price of VHS items is kept affordable. The t-shirt with the Hog-nosed snake graphic is now available and should be advertised to everyone.

Treasurer
Matt Close, VHS Treasurer, provided the Treasurer's Report dated June 6, 2016. The total current balance is $11,253.29. Total net disbursements were high at $4,293.71 due to the previously mentioned capital outlays. However, total net receipts of $2,718.21 offset some of the spending. Amazon Smile credits totaled $47.87.
Matt indicated he has collected 8 boxes of journals from Sylvia Organ bequeathed to VHS by her father James Organ and has stored them in his office. There are 12-13 additional boxes of journals/materials that still need to be retrieved. Suggestions for future disposition were requested. Donations of hard copy journals in the digital age are difficult to make and there was no clear consensus recommendation on future disposition possibilities.

Secretary
David Perry, VHS Secretary, reported that the minutes for the 2015 Fall Annual Meeting had been published in the May 2016 edition of Catesbeiana. These minutes covered several complex issues and it was recommended that the minutes be read carefully.

Website/Technology
John White, VHS Webmaster, was unable to attend the meeting. Mike Salotti reported that John has completed a Snakes of Virginia app which is now available to download on iOS or Apple. John is currently working on an Android version. The VHS Facebook page currently has 4,652 followers.

VHS Grants
Kory Steele, VHS Grants Chair, reported that Amanda Guthrie has money left over from her prior VHS grant. Kory plans to update the VHS website to require the return of any unspent grant funds to VHS, if they exceed 10% of the original award.

Conservation Committee
David Perry, VHS Conservation Chair, reported on the May1 and May 15 surveys of Chickahominy Wildlife Management Area. VHS had 13 participants on May 1 and 19

participants on May15. Despite unseasonably cool conditions on both days, thirty species were documented and 202 animals were found. Two species, with conservation status Tier I – Tier IV were encountered: the Eastern Box Turtle (Tier III) and the Eastern Hog-nosed Snake (Tier IV). In addition one county record was documented, a Broad-headed Skink. There were two other interesting observations. An Eastern Kingsnake, Northern Copperhead and a Common Five-lined Skink were found together under a single tin cover and an Eastern Ratsnake was observed constricting and consuming an Eastern Cottontail Rabbit.
Susan Watson has provided the Conservation Committee with a complete listing of all herpetological species with a VDGIF conservation status of Tier I-IV. In total there are 61 herpetological species with a Tier I-IV conservation status. Please email David Perry if you would like a copy of the complete listing.

Survey Committee
Jason Gibson, VHS Survey Committee Chair, was unable to attend the meeting. Paul Sattler provided his report. The survey committee would like to report a successful HerBlitz at Stewarts Creek Wildlife Management Area. We had around nine participants. Although our species list was small we were able to document three tiered species with a fourth one with an unknown status since it is a species still being described. Due to the effort of the VHS in surveying this property, wildlife managers will be better informed about the sensitive species found in the borders of this protected land.
The survey committee would also like to report that all surveys from last year have now been published in Catesbeiana. There are no outstanding reports of surveys that need to be published from 2015 or earlier. This committee would like to encourage all organizers of surveys in 2016 to write up their reports for Catesbeiana. Please email Jason Gibson if you need any help in getting the report organized or written. The survey committee has a survey report template that will be emailed to you in the next week as an encouragement to get this information published for all to see and use. All data sheets need to be turned in to Paul Sattler or Jason Gibson so they can be placed in the VHS archives.

New Items
Mike Salotti introduced some new business topics.

Mobile Credit Card Payments
Mike Salotti believes it will be beneficial for VHS to provide the option for mobile credit card membership payments. There are two options: 1) a low/no cost PayPal program or 2) an Apple option which will require a $150 set-up fee. Matt Close agreed to investigate both options and make a recommendation at the Fall Annual Meeting.

Wristbands for Future Surveys
Mike Salotti recommended that VHS invest in wristbands for future surveys for identity purposes. With the new decontamination practices and the liability waiver signing requirements, wristbands would be a way to verify each survey participant had completed both. In addition wristbands would be an authorization identifier to park personnel and could be a souvenir for some survey participants. Rubber was deemed to be the most practical material for wristbands. Rubber embossed bracelets are available in lots of 100 for $55 (next 100 are free). Mike Salotti

will most likely source these for use on the 2017 surveys.

Possible 2017 Survey Sites

Mike Salotti expressed concern that state parks are booking early and he suggested we begin discussing 2017 survey site possibilities earlier than in years past. Paul Sattler indicated that Jason Gibson had not yet selected a site for the 2017 HepBlitz but is leaning toward southeast Virginia and habitat that supports tree frogs. Lake Anna State Park was again mentioned as a possibility for the Spring Survey. Larry Mendoza and David Perry suggested that National Park and/or National Wildlife Refuges also be considered. The VHS had good success in the past obtaining permits for both Mason Neck and Back Bay national wildlife refuges.

Other Items

Matt Close mentioned that some of the items in the collection bequeathed to VHS by James Organ were unpublished manuscripts. One is entitled "Herps of Virginia" and there are two 1990 survey reports for the US Forest Service. There is also the Emory & Henry Field Station Book Collection. Matt is seeking suggestions from the VHS Executive Committee on ways to utilize these unpublished documents and the book collection.

Larry Mendoza recommended a DVD called 'The Venom Interviews" which includes interviews with many biologists working in the field of venom/anti-venin toxicology, including Dr. Leslie Boyer of the University of Arizona. Dr. Boyer has developed a poison control venom index and assists with snake bite cases worldwide.

There being no other business to discuss, the meeting was adjourned by Mike Salotti at approximately 19:30 hr. EDT.

David A. Perry
VHS Secretary

Virginia Herpetological Society
Treasurer's Report
October 20, 2016

Previous Report Balance – June 6, 2016	$ 11, 253.29
Net Receipts (excludes PayPal fees):	
June Dues (from June 11)	$ 98.00
July Dues	$ 69.00
August Dues	$ 196.00
September Dues	$ 588.00
October Dues (thru Oct. 20)	$ 90.00
October Donations	$ 10.00
CafePress Commission	$ 64.87
Amazon Smile Credits	$ 41.41
Total Net Receipts	$ 1157.28
Disbursements:	
Catesbiana Postage	$ 29.02
Web Hosting	$177.09
Facebook Advertisement	$10.00
Total Net Disbursements	$ 216.11
Current BB&T Balance	$11,981.12
Current PayPal Balance	$ 200.00
Current Total Balance	$ 12,181.12

VHS Membership (dues current): 164

Matthew Close
VHS Treasurer

Field Notes

The field notes section of *Catesbeiana* provides a means for publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. All field notes must include a brief statement explaining the significance of the record (e.g., new county record) or observation (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed pending consultation with the author(s).

If the field note contains information on a new county (or state) record, verification is required in the form of a voucher specimen deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a photograph (print, slide, or digital image) or recording (digital recording of anuran calls) deposited in the archives of the Virginia Herpetological Society. Photographs and recordings should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult the VHS website (County/City Herp Lists) to determine if they may have a new county record. New distribution records from large cities that formerly constituted counties (Chesapeake, Hampton, Newport News, Suffolk, and Virginia Beach) are acceptable, but records from smaller cities located within the boundaries of an adjoining county will only be published if the species has not been recorded from that county. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

PHOTOGRAPHS

High contrast photographs (digital images) of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Published photographs will be deposited in the Virginia Herpetological Society archives.

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